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## Invaders in our Waters... and their Secrets to Success

*By Mandy Beall, Aquatic Invasives Specialist, Wisconsin Department of Natural Resources and UW Extension*

Aquatic invasives species are infamous for their ability to "take over" aquatic ecosystems once they're introduced. You've likely heard stories of zebra mussels covering every available hard surface in a lake or Eurasian water-milfoil plants forming mats so dense that people can no longer boat, fish, or swim. But how do they do it? Why are these invasive species so successful?

In their native environments, there are typically predators, parasites, pathogens, and competitors that keep these species in check and create a balance. However, when they are transported to a new environment, the natural checks are usually left behind. This gives invasive plants and animals a jump on the native competition. Additionally, Wisconsin's native species haven't "grown up" with these new species, so they often don't know how to eat them or compete against them.

While it is impossible to lump them all together, invasive species also tend to have life history characteristics that allow them to invade so successfully. They often grow/mature rapidly, and tend to be very prolific - reproducing early and often. Many of them are also able to survive a wide range of sometimes-harsh environmental conditions. These traits make invasive species truly fascinating to study, and an understanding of some of their remarkable characteristics will hopefully engage students (of all ages), helping them to understand the need to protect our native systems from invasives. Here are just a few

### Stop the Spread of Aquatic Invasive Species

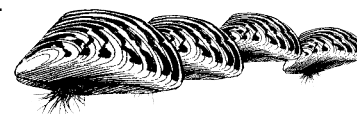
Educators may want to consider the following guidelines when conducting stream sampling, aquatic studies, and other science projects where water, plant, or animal samples are collected for study and when equipment is used in more than one water body.

- Inspect and remove plants, animals, and mud from your boat and equipment;
- Drain all water from your boat's live wells, bilge, motor, etc.;
- Dispose of your unused live bait in the trash;
- Wash your boat and equipment with high-pressure or hot water; or
- Dry your boat and equipment thoroughly for at least 5 days.



fascinating facts about some of the aquatic invasive species threatening Wisconsin:

• **Zebra mussels** can reach concentrations of tens to even hundreds of thousands per square meter. Each female zebra mussel can produce up to one million eggs per season.



*continued on page 7*

## EE News Ends After 20 Years

It is with regrets that on this twentieth anniversary of the start of *EE News*, that the Department of Natural Resources must announce that we will no longer print the newsletter following the 2004 summer issue. Deep state budget cuts have affected the department's environmental education programs. These impacts, however, will not alter our mission to continue informing citizens on natural resource issues. We will provide environmental education news, information, and teaching resources through other avenues, such as the DNR and EEK! Web sites found at: <http://dnr.wi.gov/education/> and <http://dnr.wi.gov/eeek/teacher/>

Thank you for your support of *EE News* and environmental education in Wisconsin. Please see the back page for information on subscription refunds.

***"This world, after all our science and sciences, is still a miracle; wonderful, inscrutable, magical and more to whosoever will think of it."***

~ Thomas Carlyle

# Sharpening Aquarium Etiquette

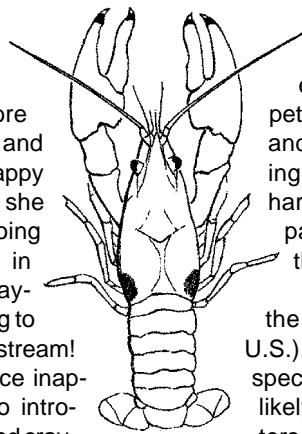
Last summer at the State Fair, Department of Natural Resources (DNR) staff received a variety of questions about invasive plants and animals in Wisconsin, but one particular question stuck in my mind. A concerned parent mentioned that her child brought a crayfish home from her elementary school classroom aquarium that summer. She didn't know what species it was or where it was from, but she DID know that, a few weeks after it arrived, she noticed at least 40 baby crayfish in her aquarium! This was more than she had bargained for and more than she wanted! The happy ending to the story is that she spoke with the DNR before doing the dreadful deed she had in mind. No, not serving the crayfish for dinner...she was going to release them into the nearest stream!

Not only is this later choice inappropriate, it is also illegal to introduce animals (including fish and crayfish) and non-native plants into Wisconsin waters. The reason for this is to prevent the introduction of species that could become invasive, and potentially have devastating impacts on fisheries, boaters, anglers, drinking water plants, and business.

The fact is, live plants and animals are great tools to use to teach biology, ecology, physiology...even animal care and responsibility in a classroom or nature center. As a naturalist, live "creature feature" programs drew some of our biggest crowds. However, many of the aquarium plants and animals available in pet shops, on the Internet and through biological supply companies are non-native, meaning that they are outside of the boundaries of

their natural range. Releasing these plants and animals into the wild can be harmful, both to the individuals that are released and to the environment.

Many aquarium pets and plants die soon after release because they are poorly equipped to survive in their new environment. Often, they are the victims of predation, starvation, temperature extremes, or



parasites and diseases. However, some non-native species are able to survive and even become invasive, competing with native species for food and habitat, and potentially causing environmental or economic harm. They can also transport parasites or diseases that may threaten native species.

Rusty crayfish are native to the Ohio River Basin (central U.S.), but have become a problem species in Wisconsin. They were likely introduced to Wisconsin waters primarily by anglers who used them as live bait. However, they are also sold to schools from biological supply companies both preserved (for dissections) and live (for use in aquariums). It is likely that some of those live crayfish have ended up in Wisconsin waters, as well. Rusty crayfish eat small fish, insects, and fish eggs. They also eat aquatic vegetation, damaging underwater habitat that is important for fish spawning and cover. They are aggressive and displace native crayfish. It was this very species that came to mind when the issue of what to do with the 40 young crayfish arose!

The problem isn't limited to crayfish. Some aquarium fish are also released. Even if they aren't able to survive, there is

still the potential for them to introduce new diseases and parasites that could harm native fish. For this and other reasons, it is illegal to release any fish or other live animal into the wild without a stocking permit from the Wisconsin DNR.

So, what did we recommend to that parent with far too many crayfish on her hands? Here are our suggestions:

- Return them to a local pet shop for resale, trade or in-store credit.
- Give them to another hobbyist, an aquarium in a professional office, a museum, or to a public aquarium or zoological park.
- Donate them to a public institution, such as another school or teacher, nursing home, hospital, or prison.
- Advertise to give them away for free. Many newspapers will run "free" ads at no charge.
- Dispose of aquarium plants by drying or freezing, then discard in a sealed plastic trash bag.
- Dispose of aquarium fish, snails, and crayfish by placing them in a container of water and putting it into the freezer. Cold temperature is an anesthetic, so this is a humane method of euthanasia.

While these suggestions are important, they should be considered as interim guidelines. Currently, national guidelines aimed at promoting awareness among aquarium hobbyists, retailers, and wholesalers are being developed through a national campaign led by Minnesota Sea Grant in partnership with the Pet Industry Joint Advisory Council, the U.S. Fish and Wildlife Service, and the Great Lakes Sea Grant Network. Once the guidelines are finalized, the Wisconsin DNR will incorporate them into our public education campaign materials.

Teachers, please remember to share this information and the alternatives to release with parents if you plan to send animals or plants home with students. You don't want those 40 young crayfish, or any other unknown species, ending up in a stream near you!

*Mandy Beall is an Aquatic Invasives Specialist, educating citizens statewide through a partnership between the Wisconsin Department of Natural Resources and the University of Wisconsin Extension. ♦*

## Acknowledgment



This issue of *EE News* is funded in part by the Wisconsin Coastal Management Program.

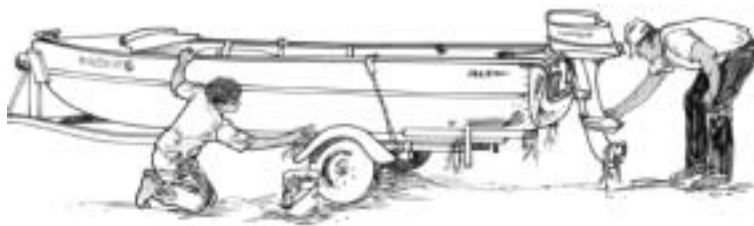
Financial assistance for this project was provided by the Coastal Zone Management Act of 1972, as amended, administered by the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration pursuant to Grant #NA17OZ2357 and the Wisconsin Coastal Management Program.

The Wisconsin Coastal Management Program, part of the Wisconsin Department of Administration, and overseen by the WISCONSIN COASTAL MANAGEMENT COUNCIL, was established in 1978 to preserve, protect and manage the resources of the Lake Michigan and Lake Superior coastline for this and future generations.

Special thanks to Mandy Beall and each of the guest authors who provided articles for this special issue.

# Kids Protect Lakes from Invasives

By Laura Felda, Volunteer Coordinator, UW-Extension  
Lakes-Invasive Species Program



Exotic species or non-native species have been hitchhiking their way into Wisconsin for decades. By water, boat and by land, from the Atlantic Ocean to the Great Lakes, invasive organisms have been moving into inland waters. Now Wisconsin's 15,081 lakes are calling for youth and adults to come down to the water, specifically at the boat landings.

During 2002-2003, a small group of middle school students in Minocqua, Hazlehurst, and Lake Tomahawk School District received a \$25,000 grant to develop an educational tool kit to help stop the spread of Eurasian water-milfoil in Wisconsin lakes. The "Milfoil Masters" program was very successful in training people on 100 lakes in 25 counties. This program established a statewide volunteer watercraft inspection program, *Clean Boats, Clean Waters*, which links youth and adults in an effort to raise awareness of all invasive species.

Volunteers participating in Clean Boats, Clean Waters will learn how to organize

and conduct a boater education program in their community. Adult and youth teams educate boaters on how and where invasive species are most likely to hitch a ride into water bodies. By performing boat and trailer checks, distributing informational brochures and collecting and reporting suspect specimens, volunteers can make a difference in helping to prevent the spread of invasive species.

To encourage participation, training sessions are scheduled at convenient locations across the state. During the training sessions, volunteers will get a general overview of the current aquatic invasive species that threaten Wisconsin lakes. Volunteers will receive a handbook and resource kit to assist them in establishing a watercraft inspection team for their community. For more information on how to get youth involved in their community, contact Laura Felda, Volunteer Coordinator, Invasive Species Program, UW-Extension Lakes-Stevens Point, 800 Reserve Street, Stevens Point, WI, 54481, 715-346-3366, lfelda@uwsp.edu.

Editor's Note: Projects similar to this one can become excellent service-learning projects that can be connected to the curriculum. For general information on service-learning visit the Department of Public Instruction's Web site at: <http://www.dpi.state.wi.us/dpi/dltcl/bbfscsp/slhpmpage.html>

Resources focusing on environmental education service-learning projects include:

"Learning From Experience: A Collection of Service-Learning Projects, Linking Academic Standards to Curriculum" found online at: [http://www.dpi.state.wi.us/pubsales/partnr\\_3.html](http://www.dpi.state.wi.us/pubsales/partnr_3.html)

"Service Learning: Education Beyond the Classroom," a booklet of service learning projects involving reducing, reusing, and recycling waste found online at: <http://www.dpi.state.wi.us/dpi/dlcl/bbfscsp/pdf/slenvrnp.pdf> ♦

# See Cella Chow Now!

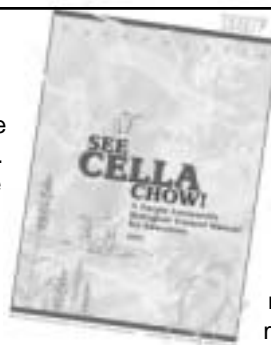
By Brock Woods, Wisconsin Purple Loosestrife Biocontrol Coordinator,  
Wisconsin Department of Natural Resources

Would you like a hands-on project for a classroom or backyard that helps students learn about wetlands, population dynamics, or predators and prey—and leaves your local environment better than it was? A program of the Wisconsin Department of Natural Resources (DNR) and UW Extension (UWEX) supports just such a project with free equipment and all the know-how needed. And now "See Cella Chow-A Purple Loosestrife Biological Control Manual for Educators" gives you everything you need to do this project at your school, nature center or club.

Purple loosestrife is an aggressive plant from Eurasia that has probably invaded wetlands in your area. If so, it can destroy your wetlands' biodiversity. The DNR/UWEX program uses two safe, purple

loosestrife-foilage-feeding beetle species to help control this plant. Citizens of all ages make up the backbone of this cooperative program by rearing and releasing these insects in their local wetlands and learning about these precious places in the process. You can be part of this effort by raising and releasing your own beetles. The program supplies free starter beetles, along with many materials and know-how. You and your students supply some tools and a few cheap, local materials and put the project together, ultimately releasing 100 times more beetles than you start with.

The manual includes project history, how to find purple loosestrife sites, a rearing primer, additional resources and application/report forms. But the heart of it for educators is fifteen classroom and outdoor activities centered on identifying local invasive problems and rearing beetles. Each activity has background information,



complete instructions, equipment lists and even appropriate teaching standards. Activities focus on biology and environment, but some emphasize math, mapping and even art skills, making integration with other subjects easy. (See the accompanying sample activity from the manual on page 4.)

Purple loosestrife bio-control is working across Wisconsin, but success is not yet assured. Get involved and help students become active environmental stewards while making your own teaching better and more fun. For information on our workshops, the project, or to order a hard copy of "See Cella Chow," contact Brock Woods at: [brock.woods@dnr.state.wi.us](mailto:brock.woods@dnr.state.wi.us) or (608) 221-6349, or visit the Web site at: [http://dnr.wi.gov/org/es/science/publications/ss981\\_2003.htm](http://dnr.wi.gov/org/es/science/publications/ss981_2003.htm) ♦

# Activity: Life After Purple Loosestrife

(Activity 12 from "See Cella Chow, A Purple Loosestrife Biological Control Manual for Educators")

**Grades: 8-12**

## Objective:

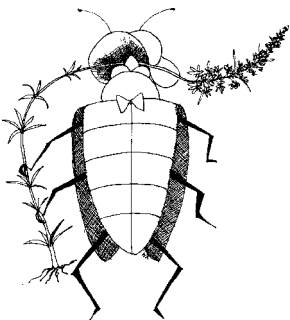
Students will design a wetland by choosing from bogs, marshes, swamps, and fens populated with native species.

## Time Requirement:

3 class periods

## Wisconsin Model Environmental Education and Science Standards:

Environmental Education:  
A.8.1, A.8.2, A.8.3, A.12.4, A.12.5, B.8.3, B.12.4. Science:  
A.8.3, B.8.4, C.8.2, C.8.7, C.8.8, C.8.9, F.8.2, F.8.6, F.8.7, F.8.8, F.8.9, G.8.5, A.12.1, A.12.7, B.12.5, C.12.3, C.12.5, C.12.6, F.12.7, F.12.8, G.12.5, H.12.4, H.12.5, H.12.7. ❖



## Description

Students custom-design their ideal wetland, after purple loosestrife has been controlled.

## Problem

What replaces the purple loosestrife?

## Materials

- Per student, one copy of the student handout (see Preparation) or obtain one copy of "Wetlands, Wonderlands" from the Wisconsin DNR.
- Art supplies.

## Preparation

Obtain copies of the student handouts. This can be done by going to the Wisconsin DNR's Web site [<http://dnr.wi.gov/org/water/fhp/wetlands/>] and selecting "Wet Is Wonderful," "Baby Boom or Bust?" and "A Spotter's Guide for Wetland Visitors," and printing out each page.

## Procedures

1. Give the following instructions to the students, having them work either individually or in small groups.
2. Select a wetland from "A Spotter's Guide for Wetland Visitors."
3. Choose enough plants to support the birds, mammals, reptiles, amphibians, and butterflies and other insects that will be incorporated into your restored wetland.
4. Make a diagram of your wetland, showing each species that you have selected.
5. Explain to the rest of the group, or to the class, the interactions among the species in your wetland.
6. Conduct a discussion of the students' choices of wetlands and compare the outcomes of each student's or group's choice.

## Background Information

Removing purple loosestrife or other invasive species, native or not, is often the first step in re-building a quality wetland. (Although, sometimes even the basic physical water regime must be restored.) Where you go from there, however, depends on the desired end result. The instructor may read from the "Wetland Restoration Handbook for Wisconsin Landowners" published by the Wisconsin Wetlands Association in conjunction with the Wisconsin DNR. The book may be purchased from Wisconsin Wetlands Association for a \$5 donation by calling (608) 250-9971 and requesting a copy or it can be downloaded, in its entirety, from the Wisconsin DNR Web site [<http://dnr.wi.gov/org/water/fhp/wetlands/>]. A list of wetland resources can be found at <http://www.wiscwetlands.org/links/>.

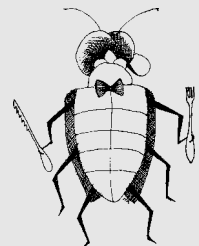
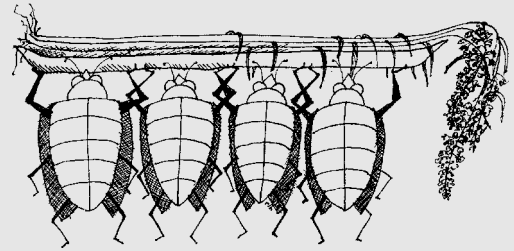
## Student Assessment

Evaluate drawings by each student or group, written explanations, and class presentations, noting how accurately they detail the interactions within a wetland and how clearly they communicate their ideas.

## Extension

A possible independent study relating to this activity is to have a student read "A Sand County Almanac" by Aldo Leopold.

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Wisconsin Department of Natural Resources. ❖*



# Aquatic Invasives Educational Resources

Most of the resources listed below, along with many others, are also included in: Aquatic Invasive Species: An Educator's Information and Materials Guide, produced by Minnesota Sea Grant found online at: [http://www.seagrants.mn.edu/exotics/ais\\_guide.pdf](http://www.seagrants.mn.edu/exotics/ais_guide.pdf)

## Classroom Resources and Curricula

### Aquatic Exotic Educational Trunk

This portable trunk contains key educational materials on invasive species. The trunk can help teachers boost student awareness about exotic issues and in turn increase public involvement in outreach, volunteer monitoring and management efforts. Contact Laura Felda, UW-Extension at (715) 346-3366 or [lfelda@uwsp.edu](mailto:lfelda@uwsp.edu) for more information.

### Attack Pack

A self-contained teaching kit designed to help high school students teach younger students about invasive species. The kit includes maps, brochures, Watch cards, overheads, PowerPoint presentations, specimens and activities. It is free to teachers and schools. Contact Phil Moy, Wisconsin Sea Grant, at (920) 683-4697 or e-mail: [pmoy@uwc.edu](mailto:pmoy@uwc.edu). View pack contents at: [http://www.seagrants.wisc.edu/outreach/nis/Attack\\_Pack/Attack\\_Pack.html](http://www.seagrants.wisc.edu/outreach/nis/Attack_Pack/Attack_Pack.html)

### Community Stewardship Projects on Exotic Aquatic Species

A booklet of activities and stewardship projects developed by students as part of the "Exotics Aquatics on the Move" education project. Contact Valerie Eichman, IL/IN Sea Grant at (217) 333-8055 or [eichman@uiuc.edu](mailto:eichman@uiuc.edu) or download the booklet at: <http://www.iisgcp.org/edu/cr/index.html>

### (EATM) Exotic Aquatics on the Move

27 classroom activities that align with National Geography Education Standards by linking ANS (Aquatic Nuisance Species) activities and projects from the Exotic Aquatics on the Move workshops, held in Indiana, Louisiana, New York, and Washington. These interpretive activities also facilitate community awareness of exotic aquatic species and improve understanding of how these species affect humans and how humans affect their dispersal and population distribution.

Contact Robin Goettel, IL/IN Sea Grant at [goettel@uiuc.edu](mailto:goettel@uiuc.edu). Cost: \$7, includes shipping. Sample Activities at: <http://www.iisgcp.org/EXOTICSPS/eatmcd.htm>

### ESCAPE

Exotic Species Compendium of Activities to Protect the Ecosystem (ESCAPE) is a collection of activities developed from the Exotic Species Day Camp Project for Educators. This package includes 36 user-friendly sets of lessons that incorporate experiments, art, music and games. The project was conducted by Programs in the Great Lakes Sea Grant Network. For more information contact: Valerie

Eichman, IL/IN Sea Grant at (217) 244-8809 or [eichman@uiuc.edu](mailto:eichman@uiuc.edu).

Visit: <http://www.iisgcp.org/edu/escape/index.html>, to view sample activities and ordering information. Cost: \$58

### Great Lakes Invaders (Lake Trout & Sea Lamprey Case Study)

This case study was developed by the Inland Seas Education Association (ISEA) - a non-profit organization whose mission is to provide a floating classroom where people of all ages can gain first-hand training and experience in the Great Lakes ecosystem. It is a 5-lesson curriculum unit based on a case study of the relationships between the native lake trout (*Salvelinus namaycush*) and the invasive sea lamprey (*Petromyzon marinus*). This and other educational resources available at: <http://www.inlandseaseducation.org/invasivespecies/resources.shtml>

### Great Lakes Invasion Curriculum Guide

This guide will give students a good introduction to aquatic invasive species and is a helpful teaching tool to enhance biology/ecology/environmental science lessons. Creative and fun activities! Developed by Illinois-Indiana Sea Grant and The Chicago Tribune News in Education.

Available at: <http://www.iisgcp.org/edu/br/grlksinv.pdf>

### See Cella Chow! A Purple Loosestrife Biological Control Manual for Teachers

A set of 14 curricular activities focusing on wetland ecology and function, invasive species and their effects and, the specific process of developing, rearing and releasing beetles to control purple loosestrife. Contact Brock Woods, Wisconsin DNR at (608) 221-6349 or [brock.woods@dnr.state.wi.us](mailto:brock.woods@dnr.state.wi.us), or Derek Strohl, WI Wetlands Association at (608) 250-9771 or [Derek@wiscwetlands.org](mailto:Derek@wiscwetlands.org) for a free copy. The entire publication can be downloaded at: [http://dnr.wi.gov/org/es/science/publications/ss981\\_2003.htm](http://dnr.wi.gov/org/es/science/publications/ss981_2003.htm)

## Publications

The DNR has a number of brochures, fact sheets, watch cards, and wild cards (see right column), and other educational materials on zebra mussels, Eurasian water-milfoil, purple loosestrife, and many other species. For a complete list visit: <http://dnr.wi.gov/org/water/wm/GLWSP/exotics/>, or contact Mandy Beall at (608) 267-3531 or [mandy.beall@dnr.state.wi.us](mailto:mandy.beall@dnr.state.wi.us)

## Video

### Stop Exotics, Clean your Boat

This eleven minute video features John Ratzberger (famous for his roll as "Cliff" on Cheers) and highlights steps that boaters can take to prevent the spread of exotic plants and animals. Contact Doug Jensen, MN Sea Grant at (218) 726-8712 or [djensen1@d.umn.edu](mailto:djensen1@d.umn.edu),

cost \$10. For more information visit: <http://www.seagrants.mn.edu/exotics/stop.html>

## Web Resources

### EEK! Alien Invader web pages, WI

DNR's online magazine for kids  
<http://dnr.wi.gov/org/caer/ce/eekearth/aliens.htm>

### Inland Seas Teacher Resources:

<http://www.schoolship.org/teachers/>

### Minnesota DNR Harmful Exotic

Species: <http://www.dnr.state.mn.us/exotics/index.html>

### Minnesota Sea Grant Exotic Species

<http://www.seagrants.mn.edu/exotics/>

### National Invasive Species Council:

Aquatic and terrestrial invasive species educational resources:

<http://www.invasivespecies.gov/education/act.shtml>

### Protect Your Waters, Stop Aquatic Hitchhikers Campaign:

<http://www.protectyourwaters.net>

### Sea Grant Nonindigenous species

home page: <http://www.sgnis.org/>

### T.E.A.C.H. Great Lakes, the Education

and Curriculum Homesite, Great Lakes Commission, Non-native invasive species pages:

[http://www.great-lakes.net/teach/pollution/ans/ans\\_1.html](http://www.great-lakes.net/teach/pollution/ans/ans_1.html)

### U.S. Geological Survey

Nonindigenous Aquatic Species:

<http://nas.er.usgs.gov>

### Wisconsin DNR Invasive Species

<http://dnr.wi.gov/org/caer/ce/invasives/>

### Wisconsin Sea Grant Nonindigenous Species

<http://www.seagrants.wisc.edu/outreach/nis/index.asp>

## Aquatic Invasive Species Wildcards

Wisconsin Wildcards are pocket-sized trading cards with eye-catching photos on the front and information on identification, the problems caused by invasives, action steps, and "wild" facts on the back. Use them as flash cards, to help with identification, or to accompany a lesson on aquatic invasives! Each card features an individual species, and 13 aquatic invasive species cards are available: Alewife, curly-leaf pondweed, Eurasian water-milfoil, purple loosestrife, rainbow smelt, round goby, ruffe, rusty crayfish, sea lamprey, spiny and fishhook waterfleas, threespine stickleback, white perch, and zebra mussel. Order a sample set of the 13 cards, or classroom sets of 30 of the individual species. Contact Mandy Beall (680) 267-3531 or [mandy.beall@dnr.state.wi.us](mailto:mandy.beall@dnr.state.wi.us). ♡

# Spring News & Events

## Celebrate the “Year of Wisconsin Forestry” in 2004

The celebration of natural resources continues—from the *Year of Water* in 2003 to “2004: *Year of Wisconsin Forestry*”—as Wisconsin residents pay homage to the vital role that both water and forest resources play in our daily lives.

Governor Doyle has declared 2004 as the *Year of Wisconsin Forestry* in honor of 100 years of professional forestry efforts that have helped re-establish a rich forest resource of 16 million acres from the cutover, abandoned forest land of the early 1900s.

In his proclamation, Governor Doyle said that the State of Wisconsin is well-prepared to assure the future of its forests in the 21<sup>st</sup> century and beyond, while honoring the forestry achievements of the past. This was due to the foresight of legislative, conservation and community leaders in the early 1900s, who, following the era when substantial portions of Wisconsin's forests were cleared for wood used to build Midwestern cities, established a regulatory framework that encouraged reforestation of Wisconsin. It also ensured that this renewable resource would be restored and well-managed for future generations.

Wisconsin forestry organizations have a time-honored commitment to education and today, Wisconsin children annually celebrate both Arbor Day and Forest Appreciation Week. Educators and students also benefit from the many forestry education programs created over the years and available today throughout the state including: school forests, the 1935 Wisconsin

Conservation Education Statute, Project Learning Tree, LEAF (Learning, Experiences and Activities in Forestry) program, Wisconsin Environmental Education Board (WEEB) forestry grants, and more.

Here are some of the exciting events that educators and students can participate in this year to continue Wisconsin's tradition of integrating forestry into education:

- The Wisconsin Association of Environmental Education fall conference will focus on forestry education (see page 11).
- The Natural Resources Foundation will provide a fourth-grade level historical fiction book at libraries and schools late this summer.
- The 2004 Summer Library Reading Program theme is “Discover New Trails @ Your Library” at Wisconsin public libraries. A new forestry picture book for four through seven-year-olds will be available in late May. Libraries, in honor of Smokey Bear's 60th birthday, will also offer a birthday card contest.
- Girl Scouts can earn the Wisconsin Society of American Foresters' “2004: Year of Wisconsin Forestry” patch for all troop levels in Wisconsin.
- Hike in the woods or try a hands-on activity at an “Open Woods” event being hosted by members of the Wisconsin Woodland Owners Association at numerous locations around the state.



To get details on these events, visit the Year of Forestry Web site at: <http://www.wisconsinforestry.org>

As Gov. Doyle said, “Forests are one of the state's most important natural resources. They support and improve the quality of life for all residents, provide innumerable social, ecological and economic benefits for Wisconsin, and offer scenic majesty and myriad recreational opportunities for residents and visitors.”

Join the celebration of Wisconsin's forest resource in 2004! ♦

## Second Annual Wisconsin Groundwater Festival Scheduled



**April 23, Waukesha County Exposition Center**

This year's Festival theme is “Sparkling Waters - The Underground Connection.” Schools statewide are invited to attend a day of interactive groundwater lessons and entertainment by folksinger Ann Rowland.

Please consider supporting this event by volunteering or through financial contributions. Contact Lee Trotta, 18905 Wilderness Court, #D, Brookfield, WI 53045, by e-mail at [ltrotta53072@yahoo.com](mailto:ltrotta53072@yahoo.com), or call (262) 641-9341. Donations should be sent to Carroll College, Environmental Sciences, WI Groundwater Festival, 100 North East Avenue, Waukesha, WI 53186.

Further information about the Festival is available online at: <http://www.uwsp.edu/cnr/gwguardian/wigg/index.htm#Festival> ♦

## LEAF Materials and Courses Now Available

LEAF—Learning, Experiences, and Activities in Forestry—Wisconsin's K-12 Forestry Education Program is a partnership program between the WI Center for EE and the WI DNR Division of Forestry. Unit-based lesson guides and associated professional development courses for teachers are now available. Additional workshops for nature centers and landowners are coming up. For informa-



tion on all LEAF materials and activities check out the LEAF Web site at: <http://www.uwsp.edu/cnr/leaf> ♦



## Get WISE about the Gypsy Moth and Project Learning Tree

The WISE program allows online inquiry projects in physical earth and life sciences for middle and high school-aged students. It uses the power of the Internet as a learning tool, guiding students to analyze and critically assess current scientific issues. The program engages students in an exciting, interactive, three to four day curriculum project that will enhance their science, math, social studies, geography, and writing skills.

The workshops will train secondary educators to use WISE to integrate current environmental issues and technology in the classroom. While these WISE workshops will focus on the Gypsy Moth, there are many other topics that teachers can use in the classroom after obtaining program training. Topics include: earthquakes, exotic species, genetically modified foods, heat and temperature, HIV, organic foods, plants in space, rainforest interactions, water quality, wolves, and others.

In addition to WISE training, all workshops include Project Learning Tree's *The Changing Forest: Forest Ecology*. The activities in this module are designed to encourage students to explore and learn about forest ecosystems through hands-on discovery and experimentation. It contains activities that include a forest inventory, forest health, invasive species, succession and fire management. All participants will receive the module.

This spring, the DNR will host WISE (Web-based Inquiry Science Environment) and PLT (Project Learning Tree) workshops for teachers in grades five through 12 across the state. These workshops are free of charge and \$100 substitute teacher stipends are available. Space is limited. For more information or to register, contact Colin Kelly, Gypsy Moth Education Specialist at: [colin.kelly@dnr.state.wi.us](mailto:colin.kelly@dnr.state.wi.us), or call (608) 267-6854. ♦

## Shine a Little Light on Earth Day

Need a fundraiser idea that is environmental, educational, and different? Sell compact fluorescent light bulbs (CFLs) through the Bright Idea Fundraiser. Wisconsin K-12 Energy Education Program (KEEP) and Focus on Energy are offering students the opportunity to raise money while spread-



ing an environmental message. Last year, over 400 students sold more than six thousand CFLs, raising \$19,000 for Wisconsin student organizations. For further information about the Bright Idea Fundraiser event, contact Susan Ermer at (715) 346-4349 or by email at: [sermer@uwsp.edu](mailto:sermer@uwsp.edu). ♦

## 2004 WAEE Conference Celebrates 100 Years of Forestry in Wisconsin

Mark your calendars for October 28-30, 2004 and take part in an event that celebrates the past and looks at the future of Wisconsin's forests. The conference will include sessions, workshops, and field trips on "sustaining our forests," "history of Wisconsin's forests," "school forests and

the outdoor classroom," and "forestry education." The conference will take place at the Telemark Lodge in Cable, Wisconsin. Visit our Web site for details: <http://www.uwsp.edu/waee>. ♦



*continued from page 1*

## Invaders in our Waters

- A single mature **purple loosestrife** plant can produce two to three million seeds per year.
- New **Eurasian water-milfoil** plants can grow from a single plant fragment. In the summer, they can grow over two inches a day...up to 17 feet tall in Wisconsin!
- **Curly-leaf pondweed** actually grows under the ice, so it gets a jump on the native plants that don't begin growing until spring.
- **Round Gobies** (invasive fish in the Great Lakes) spawn up to four times per year and, despite their small size, are very aggressive.
- Some female **Spiny and Fishhook Waterfleas** (tiny invasive crustaceans found in the Great Lakes and one inland lake in the fall of 2003) are able to reproduce without males. Under certain conditions, females produce resting eggs, which can resist drying and survive out of the water for weeks, even after the female dies.

*Spiny Waterflea*



While their adaptations help to explain why invasive species are able to spread and become established, it is important to note that most introductions are not suc-



*Eurasian water-milfoil*

cessful. The fewer the opportunities these species have to enter new waters, the smaller their chances of becoming established there.

Use the information in this special issue to help make students aware of the affect non-native species can have on Wisconsin's aquatic resources. Learn the simple, yet often overlooked, steps people can take when enjoying Wisconsin's waters to help stop the spread of invasive species and to protect our native plants and animals. ♦

## Web Resources

### Air Defenders: The Quest for Clean Air

<http://www.airdefenders.org>

Log onto this new Web site to learn about open burning, air quality and respiratory health. Kids meet characters Seeker, Identifier, and Recyclotron while they learn fun facts, play games, and listen to music. Make sure to check out the Teacher Pages filled with resources for educators. ♦



### Join Wisconsin's Green Schools Program

Discover how your school can experience educational, environmental, and economic rewards through participation in the Wisconsin Green Schools Program. Whether your school already employs various environmental practices, or it is new to the concept of environmental sustainability, there is a place for your school to excel and receive recognition as a Wisconsin Green School. We've added some new links to the Green Schools Web site including the Green Schools Poster and teaching activity as well as connections to the Wisconsin Model Academic Standards for environmental education, science, and social studies. For further information visit the Wisconsin Green Schools Web site at: <http://dnr.wi.gov/org/caer/ce/greenschools/> ♦



## Natural Resource Education Resources Online

<http://dnr.wi.gov/education/>

The Department of Natural Resources' education programs help people of all ages understand and appreciate our state's natural resources. We invite you to learn how to use, protect, and conserve natural resources for today and future generations. Visit our Web site today to learn about our many free or low-cost programs and training sessions in the following areas:



- \*Kid's Programs
- \*Teacher & Youth Leader Programs
- \*Places to Go and Learn
- \*K-12 Educational Publications
- \*Outdoor Safety & Skills Programs ♦

### School Forests Highlighted

For more information on Wisconsin's school forests, read the Wisconsin Natural Resources Magazine article entitled, "Forests of opportunity" online at: <http://www.wnrmag.com/stories/2003/dec03/forscho.htm> and subscribe today to stay up-to-date with the latest information about the state of our natural resources. ♦

## Get Teaching IDEAS at "<http://www.ideas.wisconsin.edu/waee/>"

Bookmark this Web site for one-stop, searchable online environmental education resources for Wisconsin's educators. Environmental Education Resources on the Web is a web-portal site that provides educators a starting point in their search for educational materials. It also saves time as it allows a focus on instruction, technology, and the Wisconsin Model Academic Standards. Plus, you know you're

getting a quality resource that other Wisconsin educators have recommended.

The site allows you to search for lesson plans, student sites, online projects, teacher resources/references, and teacher tools by:

- subject
- grade level
- Wisconsin Environmental Education Model Academic Standards

- North American Association for Environmental Education (NAAEE) Guidelines for Learning

The site is an exciting partnership between the Wisconsin Association for Environmental Education (WAAEE) and the IDEAS portal Web site. This project is graciously funded through a Wisconsin Environmental Education Board (WEEB) Grant and WAAEE. Visit the site today. ♦





# EEK! For Teachers

## EEK!—Environmental Education for Kids

<http://dnr.wi.gov/eeek/>

This spring on EEK!, you and your students will find the following...



## Our Earth



### Earth Day, April 22

How will you celebrate? Come to EEK! for information on the first Earth Day and find ideas for how you can make a difference and help our shared home, Earth.

### Arbor Day, April 30

If you're thinking of planting a tree, EEK! can give you directions. You'll also find information on the history of Arbor Day, along with how important trees and forest products are in our lives.

## Nature Notes



### Spring Phenology

Get ready for the return of the migrants and the awakening of the hibernators. EEK! has some sure signs of spring for you to look and listen for.

### Happy Birthday Forestry

This year is the centennial for professional forestry in Wisconsin. From houses to furniture to paper, wood products are everywhere. And, the good news is that Wisconsin is growing more wood than is being harvested every year. Our forests are helping meet the growing demands for wood products. They also provide a place for us to play—to hike, cross country ski, go snowmobiling and even snowshoe. What else do Wisconsin's forests provide? Habitat for all kinds of critters of course! In this year of centennial celebration, EEK! can help you and your students learn more about forestry and trees. Check out the Happy Birthday Forestry page.

### Fun Fur Facts

Do you know what makes a mammal a mammal? One of the things is hair. EEK's Fun Fur Facts can shed some light on the subject.



## Cool Stuff

### Edible Aquifers

Here's a tasty way to learn about groundwater. Take some white soda, ice cream, a straw, and a few other treats to simulate how groundwater moves and observe how what we do on the surface can affect groundwater. And, then, when the lesson is finished, eat up!

### Critters From Nature

Pine cones, spruce cones, samaras, acorns, milkweed pods and some fishing line come together to create critters from nature. (You can view this activity on the Into the Outdoors (ITO) television show airing on March 13-14. For show times in your area, visit the ITO site at <http://www.intotheoutdoors.org>)



### Spring Scavenger Hunt

Enjoy the spring season and put your senses to work. See if you can find the items on EEK's spring scavenger hunt. What's your favorite sign of spring? Let us know.

## Teacher Pages

### Spring Calendar

As always, EEK! will keep you informed about upcoming teacher education workshops. If you've never been to a Project WILD or Project Learning Tree workshop, give one a try. You'll be glad you did. (Note: as EE News comes to an end, the EEK! Teacher Pages will begin hosting some of the information that would have been found in EE News.)

### Forestry Centennial

To celebrate the centennial, there will be a number of educational events and products available throughout 2004.

You can find out more about the centennial by logging in to:

<http://www.wisconsinforestry.org>. ♦



## News From the Wisconsin Association for Environmental Education

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(715) 346-2796  
<http://www.uwsp.edu/wae/>

### Meet Board Member Gail M. Epping

My love of the nature goes all the way back to my childhood on the banks of a little "crick" behind our house. Memories exploring this microcosm shaped my love of little critters, the earth, water and sky! Nurturing this love in others, especially children, has and always will be my career goal because of how much it adds to our lives.

At the Aldo Leopold Nature Center, I direct some amazing EE programs with greatest team of environmental educators I've ever had the pleasure to work with. Serving on the WAE Board I've grown to realize the breadth of EE leadership and experience we have among our membership and in our state. It has been very rewarding serving the membership of WAE. I urge all of YOU to bring that experience to light by joining a committee, running for the Board or donating your time for the benefit of the organization! ♦

### Board Election Update

*By David J. Eagan, Election Chair*

In December 2003, WAE's membership elected five members to its 11-person Board of Directors. We are pleased to introduce Rebecca Clarke, Jeremy Higgins, Betsy Parker, and students Michelle Hartwig and Angela Vlies. All began their terms in January 2003 at the Winter Workshop.

**Rebecca Clarke** is staff assistant for the LEAF Program at UW-Stevens Point. According to her philosophy on EE, she says "It's not enough anymore to just get people outside; we must get people connected" to the land and each other. In her second consecutive term on the board, she hopes to be a "spark plug," getting more members involved in outings, professional development, and conference Implementation.

Currently, **Jeremy Higgins** is outreach coordinator of the National EE Advancement Project, headquartered at UW-Stevens Point. He worked previously for the Leopold Education Project and for "Ringnecks," the youth conservation education program of Pheasants Forever. As a board member, he hopes to expand WAE's role in the state by cultivating a larger and more diverse membership. Offering increased opportunities for networking and learning at conferences and meetings is another goal.

**Betsy Parker** works as a naturalist at Aldo Leopold Nature Center in Monona where she develops EE curricula and after-school programming. She also coordinates the Nature Net program, a statewide EE networking organization. Through WAE, she hopes to reach more Wisconsin youth, educators and legislators to cultivate a greater sense of wonder and appreciation for the natural world — and to

teach everyone how to take action on behalf of the environment.

Student **Michelle Hartwig** is an undergraduate at UW-Stevens Point. She has been involved in EE at the Central Wisconsin Environmental Station, at a summer camp in Amery, Wisc. and on trips to Russia. During her one-year board term, she intends to help WAE become more accessible and useful for college students. One idea is to set up a Web site that lists openings for jobs and internships of interest to students and graduating seniors.

**Angela Vlies**, a senior at Northland College in Ashland, will return for a second year on the board. Preferring a hands-on approach to EE, she notes "I believe it is important for students not only to learn about the environment, but experience it as well." Through such personal, experiential connections, students are motivated to take action to protect natural resources. She plans to promote WAE and its EE professionals as a significant resource for students.

Special thanks and best wishes to Jim McGinity (last year's board chair), plus Michael Anderson, Rebecca Clarke and David Swanson who completed their terms on the board, and to student members Emily Jacobs and Angela Vlies who finished one-year terms.

To run for the board, or to nominate a candidate, contact a current board member or visit our Web site for details. As always, share your ideas on how WAE can better serve its members. ♦



## Project WILD/ Project Learning Tree



### Program Update

Betty Prescott will continue to support the programs through the distribution of activity guides and workshop materials. Cindy Bertalan and Janet Hutchens will both pick up some of the duties of coordinating the programs until final assignments are made later in spring. Facilitators are encouraged to plan workshops and request materials far in advance, using the workshop proposal form, to allow enough processing time given the staffing shortage. Workshops open to a general audience are being posted on the DNR Web site to assist with promotion. The workshop calendar can be viewed at: <http://www.dnr.wi.gov/org/caer/ce/eeek/teacher/calendar.htm> ❖

P.O. Box 7921,  
Madison, WI 53707  
(608) 264-6280

<http://dnr.wi.gov/org/caer/ce/pltwild/wild.htm>

<http://dnr.wi.gov/org/caer/ce/pltwild/plt.htm>

### 2004 Facilitator Conferences

This year's facilitator conferences will focus on the "Year of the Forest" in Wisconsin during the centennial of the state forestry program. Reserve either June 15 for the Stevens Point conference or June 17 for the Milwaukee conference. Registration materials will be available in March.



### Future Communications

The facilitator's page on the DNR Web site (<http://dnr.wi.gov/org/caer/ce/pltwild/facil.htm>) will become the new central hub of communications. This will be the place to download workshop forms, get facilitator resources and see sample flyers. Information will be sent through the mail when necessary, but we would like to use e-mail as much as possible to reduce costs.

**If you have not already done so, please send Betty ([betty.prescott@dnr.state.wi.us](mailto:betty.prescott@dnr.state.wi.us)) your e-mail address right away to complete our database.** ❖

## A Farewell from Al Stenstrup

On January 5, 2004, I started working for National PLT in Washington DC. After 30 years of teaching and developing EE programs in Wisconsin, it was time for new adventures. My new position offers many opportunities and challenges. It will involve work with development of new PLT materials, revision of the PreK-8 Activity guide, and implementation of programs at both the national and international levels. My sabbatical two years ago to work in DC for six months had given me a chance to learn about the area and meet many people. The area has tremendous resources and is even a little warmer!

Over the years my position with the Department has provided many great opportunities. The greatest enjoyment of my work has been meeting, working, and making friends with many talented and energetic educators across Wisconsin and the country. I take with me many great memories and smiles. I have learned many things from all of you. Formal and non-formal educators are the backbone of EE across the state and your efforts make a difference in protecting and improving the environment and the quality of life for all. Keep up the great work - education is the foundation of environmental stewardship and the kids, teachers, and citizens all need and appreciate your efforts!

A big thank you to the staff in Communications and Education at the DNR. They are a dedicated and creative group of specialists that do a lot with limited resources. Special thanks to Betty, Cindy, the past staff of WILD/PLT/WET, the many volunteer facilitators, and all the educators who served on advisory groups to assist the Department in its education efforts.

Thanks to all of you who have sent warm wishes, I hope our paths will cross in the future. If you are in the DC area, please stop by for a visit. If I can be of assistance, do not hesitate to call me at (202) 463-2457, or e-mail: [astenstrup@plt.org](mailto:astenstrup@plt.org). Muchos sonrisas.



# Subscription Refunds

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